MATHS

BOOKS - CBSE COMPLEMENTARY MATERIAL MATHS (HINGLISH)

AREAS RELATED TO CIRCLES

Very Short Answer Questions

1. If the diameter of a semicircular protractor is 14 cm, then find its perimeter.

2. If the circumference and the area of a circle are numerically equal, then the diameter is equal to $\dfrac{\pi}{2}$ (b) 2π (c) 2 (d) 4

3. Is the area of the circle inscribed in a square of side a cm, $\pi a^2 cm^2$? Give reasons for your answer.

4. Write the area of the sector of a circle whose radius is r and length of the arc is l .

5. The radius of a wheel is 0.25 m. The number of revolutions it will make to travel a distance of 11 km will be (a) 2800 (b) 4000 (c) 5500 (d) 7000

6. If the area of circle is 616 cm², then what is its circumference?

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7. The area of the circle that can be inscribed in a square of side 6 cm is

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8. The diameter of a circle whose area is equal to the sum of the areas of the two circles of radii 24 cm and 7 cm is

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9. A wire can be bent in the form of a circle of radius 35 cm. If it is bent in the form of a square, then what will be its area?

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10. What is the angle subtended at the centre of a circle of radius 6 cm by an arc of length $3 \pi \, cm$?

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11. Write the formula for the area of a sector of angle θ (in degrees) of a circle of radius r .

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12. The circumference of two circles are in the

ratio $2 : 3$. Find the ratio of their areas.

13. The difference between the circumference

and radius of a circle is 37cm. Using $\pi = \dfrac{22}{7}$

,find the circumference of the circle.

14. If diameter of a circle is increased by 40%, then its area increases by (a) 96% (b) 40% (c) 80% (d) 48%

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15. The hour hand of a clock is 6 cm long. Find the area swept by it between $11:20am$ and $11:55am\left(incm^2\right)$

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16. The diameter of a circle whose area is equal to the sum of the areas of the two circles of radii 24 cm and 7 cm is

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17. The area of the circle that can be inscribed in a square of side 6 cm is

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18. The length of the minute hand of a clock is 14 cm. Find the area swept by the minute hand in 5 minutes.

19. If the peremeter and the area of a circle are numercally equal, then the radius of the circle is:

A. 2 units

B. 11 units

C. 4 units

D. 7 units

Answer:

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20. Write expression for circumference of a circle of radius 'r'

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21. Area of a circle of radius s is _____ ,

22. The length of an arc of a sector of angle $\theta°$ of a circle with radius R is

23. Area of a sector with radius r and angle with degrees measure θ is _____ .

24. Is it true to say that area of segment of a circle is less than the area of its corresponding sector? Why ?

Short Answer Type I Questions

1. Find the area of a quadrant of a circle whose circumference is 22 cm.

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2. What is the angle subtended at the centre of a circle of radius 10 cm by an arc of length 5 π cm?

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3. If a square is inscribed in a circle, find the ratio of the areas of the circle and the square.

4. Find the radius of semicircle if its perimeter is 18 cm.

5. If the perimeter of a circle is equal to that of a square, then the ratio of their areas is

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6. What is the ratio of the areas of a circle and an equilateral triangle whose diameter and a side are respectively equal?

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7. In fig., O is the centre of a circle. The area of sector OAPB is $\dfrac{5}{18}$ of the area of the circle. Find x.
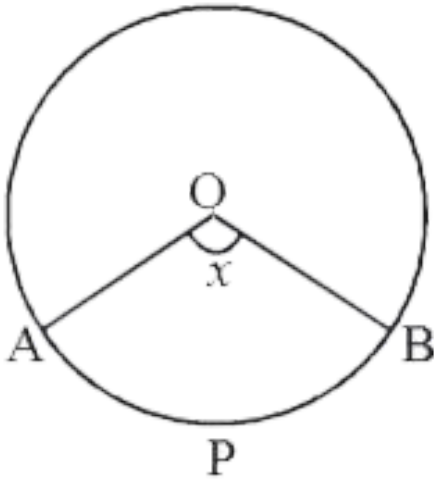
8. Find the perimeter of a given fig, where AED is a semicircle and ABCD is a rectangle.
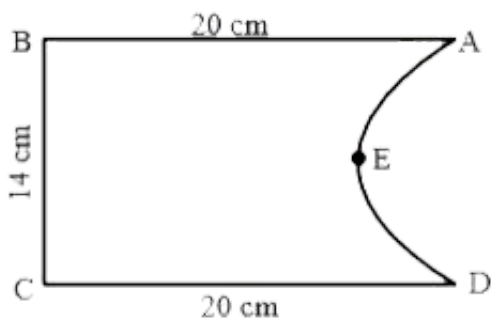
9. In fig. OAPBO is a sector of a circle of radius 10.5 cm. Find the perimeter of the sector.

P

A

B

60°

O
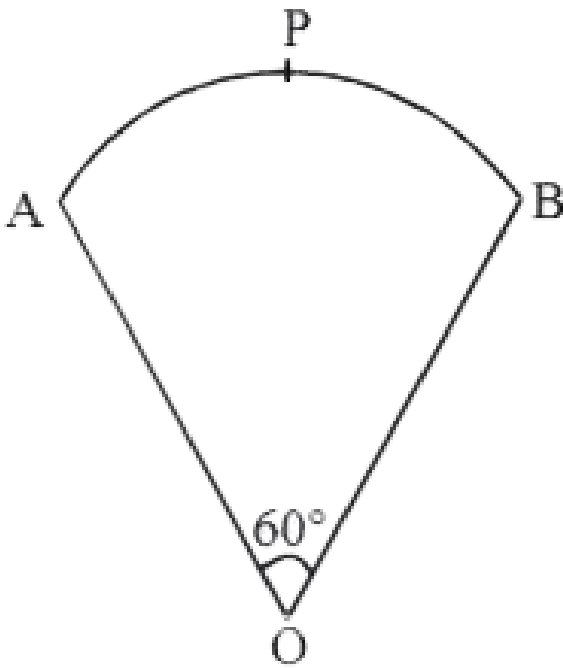
10. In the given fig, APB and CQD are semi circles of diameter 7 cm each, while ARC and BSD are semicircles of diameter 14 cm each.

Find the perimeter of the shaded region. (Use $\pi = \dfrac{22}{7}$)
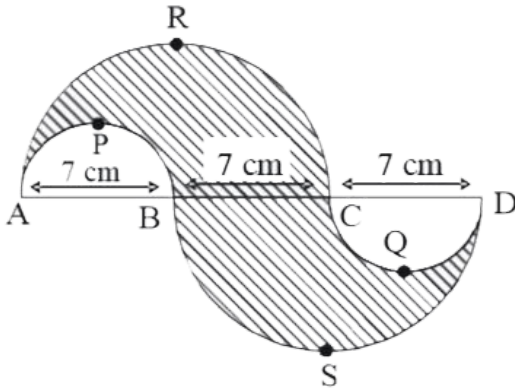
A. 125.5cm

B. 120.5cm

C. 110.5cm

D. 115.5cm

Answer: D

Short Answer Type Ii Questions

1. Area of a sector of a circle of radius 36 cm is $54\pi cm^2$. Find the length of the corresponding arc of sector.

2. The length of the minute hand of a clock is 5cm. Find the area swept by the miute hand during the time period $6:05$ am and $6:40$ am.

3. In figure ABDC is a quadrant of a circle of a radius 28 cm and a semi circles BEC is drawn with BC as diameter find the area of shaded region:

4. In fig, OAPB is a sector of a circle of radius 3.5 cm with the centre at O and $\angle AOB = 120°$. Find the length of OAPBO.
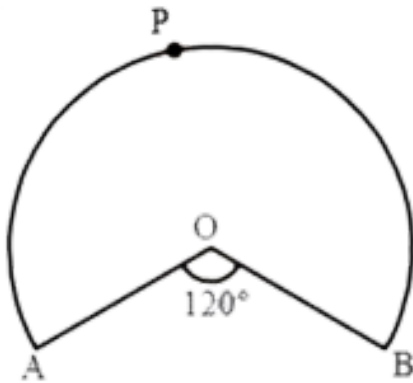
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5. Circular footpath of width 2 m is constructed at the rate of ₹ 20 per square meter, around a circular park of radius 1500 m. Find the total cost of construction of the foot path. (Take π = 3.14)

6. A boy is cycling such that the wheels of the cycle are making 140 revolutions per minute. If the diameter of the wheel is 60 cm, calculate

the speed per hour with which the boy is cycling.

7. Find the area of the sector of a circle with radius 4 cm and of angle $30o$. Also, find the area of the corresponding major sector. $(Use \ \pi = 3.\ 14)$

8. What is the area of the largest triangle that can be inscribed in a semicircle of radius r unit.

9. Figure ABCD is a trapezium of area $24.5 cm^2$. If $AD \mid \mid BC, \angle DAB = 90°$, AD = 10 cm, BC= 4cm. If ABE is a quadrant of a circle. Find the

area of the shaded region $\left(\pi = \dfrac{22}{7}\right)$
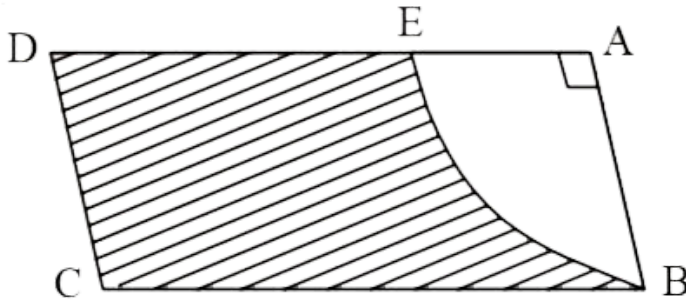
10. From each of the two opposite corners of a square of side 8cm, a quadrant of a circle of radius 14. cm is cut. Another circle of radius 4.2cm is also cut from the centre as shown in

figure. Find the area of the remaining (shaded)

portion of the square.

11. A sector of $100°$ cut off from a circle

contains area 70.65 cm^2. Find the radius of the

circle. (π = 3.14)

12. In fig. ABCD is a rectangle with AB= 14 cm and BC= 7 cm. Taking DC, BC and AD as diameter, three semicircles are drawn. Find the area of the shaded portion.
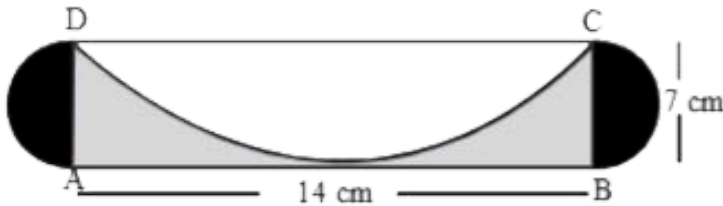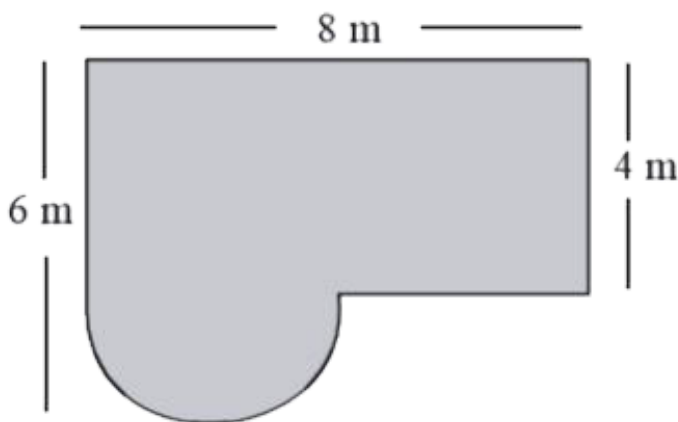
13. A square water tank has its side equal to 40 m. There are four semi-circular grassy plots all

round it. Find the cost of turfing the plot at Rs

1.25 per square metre $(Take \ \pi \ = \ 3.14)$

14. Find the area of the shaded region shown

in the fig.

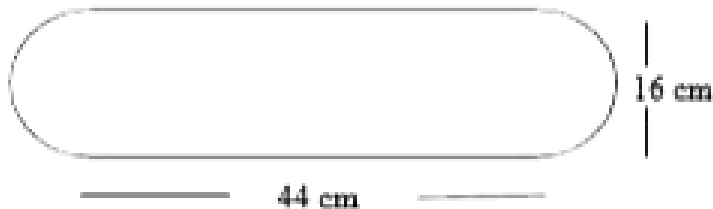**15.** Find the area of the minor segment of a circle of radius 21 cm, when the angle of the corresponding sector is $120°$.

16. A piece of wire 11 cm long is bent into the form of an arc of a circle subtending an angle of $45°$ at its centre. Find the radius of the circle.

17. Find the area of the flower bed (with semicircular ends).

16 cm

44 cm
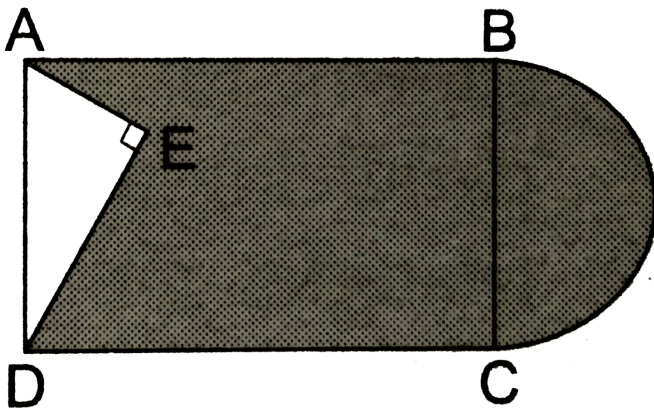
18. In the given figure, from a rectangular region ABCD with $AB = 20cm$ a right triangle

AED with $AE = 9cm$ and $DE = 12cm$, is cut off. On the other end, taking BC as diameter, a semicircle is added on outside the region. The area of the shaded region.
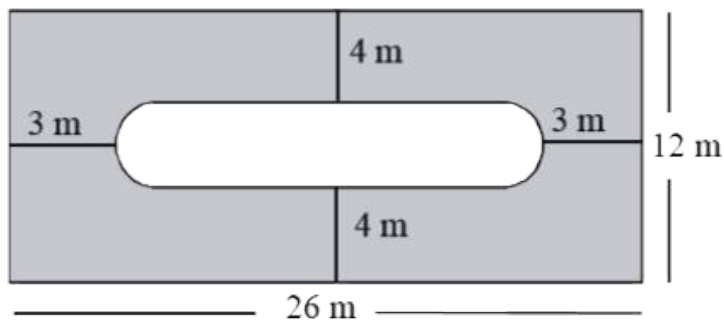
[Use $\pi = 3.14$]

19. The circumference of a circle exceeds the diameter by 16.8 cm. Find the radius of the circle

20. Find the area of the shaded region.

1. Two circles touch externally. The sum of their areas is 130 $\pi sq.cm.$ and the distance between their centres is 14cm. Find the radii of the circles.

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2. In Figure 6, three circles each of radius 3·5 cm are drawn in such a way that each of them touches the other two. Find the area enclosed between these three circles (shaded region).

3. Find the number of revolutions made by a circular wheel of area 6.16 m^2 in rolling a distance of 572 m.

4. All the vertices of a rhombus lie on a circle. Find the area of the rhombus, if area of the circle is 2464 cm^2.
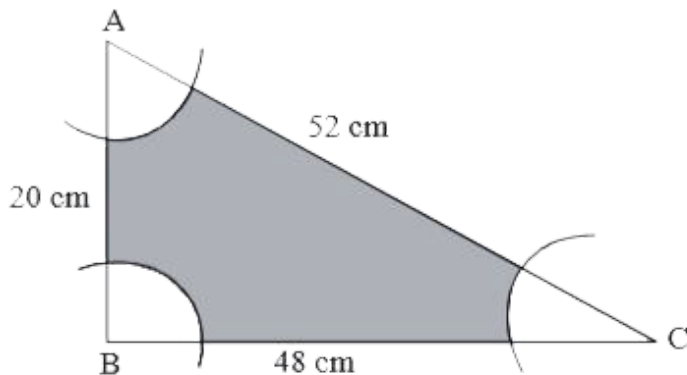
5. With vertices A, B and C of a triangle ABC as centres, arcs are drawn with radius 6 cm each in fig. If AB= 20 cm, BC= 48 cm and CA= 52 cm,

then find the area of the shaded region.
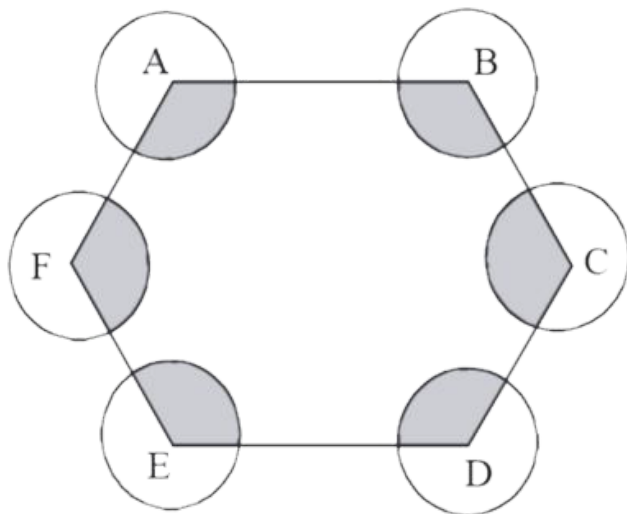
6. ABCDEF is a regular hexagon. With vertices

A, B, C, D, E and F as the centres, circles of

same radius 'r' are drawn. Find the area of the
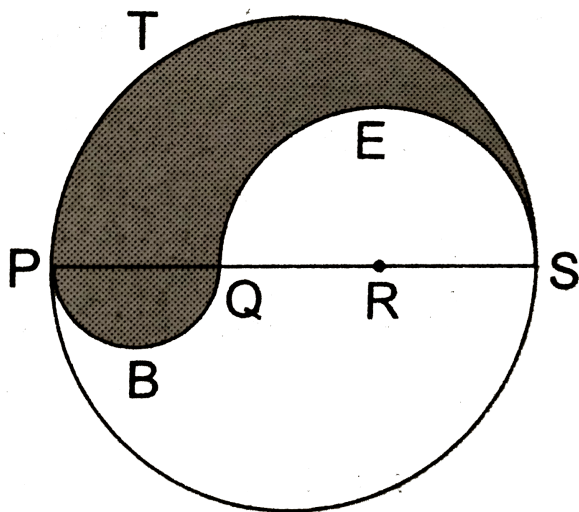
shaded portion shown in the given figure.

7. PQRS is a diameter of a circle of radius 6cm. The lengths PQ,QR and RS are equal. Semicircles are drawn with PQ and QS is

diameters, as shown in the given figure. If $PS = 12cm$, find the perimeter and area of the shaded region.

[Take $\pi = 3.14$]

8. A poor artist on the street makes funny cartoons for children and earns his living. Once he made a comic face by drawing a circle within a circle, the radius of the bigger circle being 30 cm and that of smaller being 20 cm as shown in the figure. What is the area of the
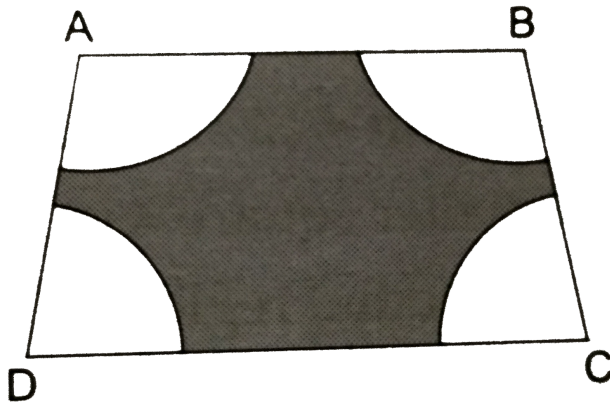
cap given in this figure?
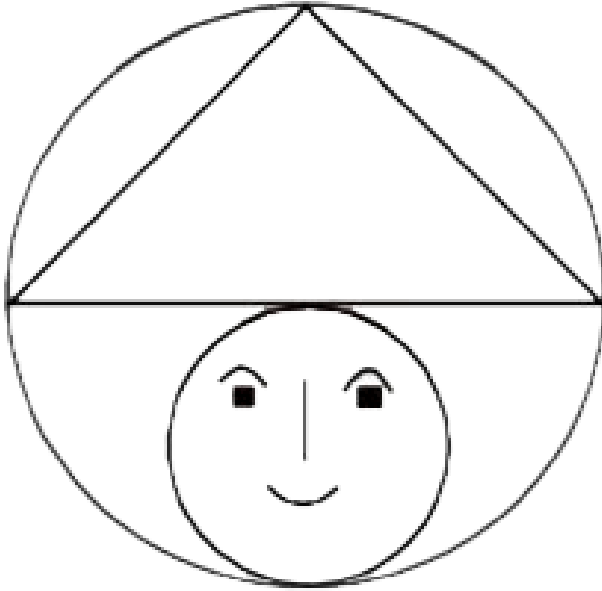
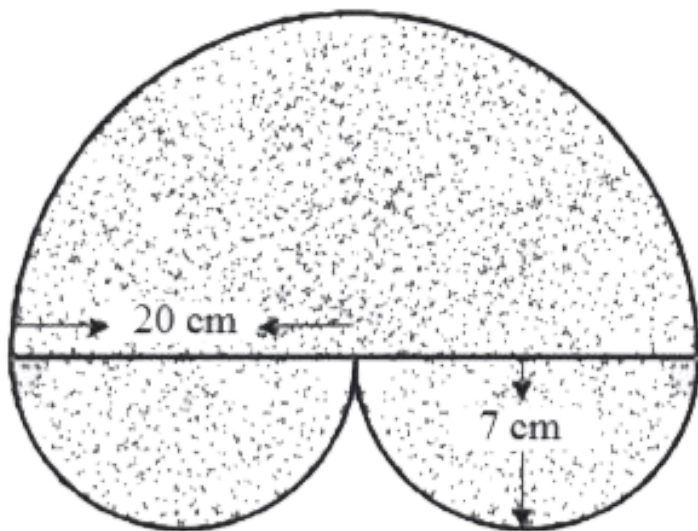**9.** In the given figure ABCD is a trapezium in which

which

$AB \mid \mid DC, AB = 18cm, DC = 32cm$ and the distance between AB and DC is 14 cm. If arcs of equal radii 7 cm hav been drawn with centres A,B,C and D then find the area of the shaded region.

10. Find the area of the shaded region in the given figure.

20 cm

7 cm

Practice Test Areas Related To Circles Section A

1. The circumferences of two circles are in the ratio $2:3$. What is the ratio between their areas?

The area of two circles are in the ratio $4:9$. What is the ratio between their circumferences?

2. If the diameter of a protactor is 21 cm, then find its perimeter.

3. Area of a circle of radius P is _____ .

4. Tick the correct answer in the following and justify your choice : If the perimeter and the area of a circle are numerically equal, then the radius of the circle is(A) 2 units (B) πunits (C) 4 units (D) 7 units

    A. 2 units

B. π units

C. 4 units

D. 7 units

Answer:

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Practice Test Areas Related To Circles Section B

1. The length of minute hand of a clock is 14cm.

Find the area swept by the minute hand in one

minute. $\left(Use\, \pi \dfrac{22}{7} \right)$

2. Find the area of a circle whose circumference is 22 cm.

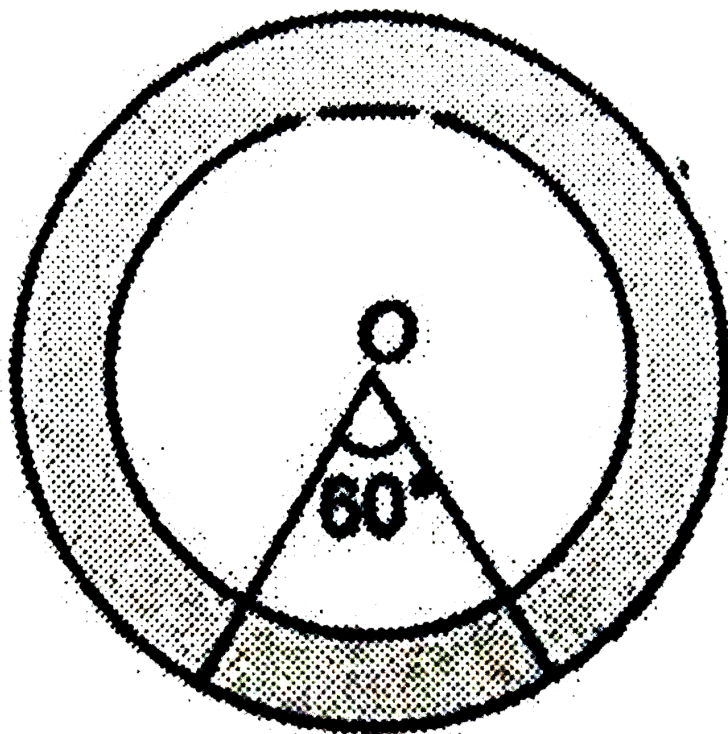**3.** Find the area of a quadrant of a circle whose circumference is 44 cm.

1. A horse is tied to a pole with 28 m long string. Find the area where the horse can graze. (Take$\pi = \dfrac{22}{7}$).

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2. In the given figure, two concentric circles with centre O, have radii 21 cm and 42 cm. If

$\angle AOB = 60°$, Find the ara of the shaded region

Practice Test Areas Related To Circles Section D

1. A chord AB of a circle of radius 10 cm makes a right angle at the centre of the circle. Find the area of the major and minor segment. (Use $\pi = 3.14$)

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